Erosion & Sediment Control Technical Bulletin No. 4

Nutrient Management for Development Sites

PRINCIPLE

This Erosion & Sediment Control Technical Bulletin updates the vegetative cover standards and specifications 3.31 Temporary Seeding, 3.32 Permanent Seeding, 3.33 Sodding, and 3.34 Bermudagrass & Zoysiagrass of the *1992 Virginia Erosion and Sediment Control Handbook*, in accordance with the *1995 Virginia Nutrient Management Standards and Criteria*. Specifically, the vegetation standards and specifications have been updated to reflect that no more than one (1) pound of water soluble nitrogen per 1,000 square feet is to be applied on construction sites in a 30 day period. Attached are one-page updates to the vegetative cover standards and specifications, which provide updated fertilizer and lime rates and the seeding schedules for the different physiographic regions of Virginia.

This document also discusses the need to ensure healthy vegetative growth by promoting a fertile soil as a crucial step in the establishment of vegetation, which can reduce the amount of nutrients (fertilizers) required to maintain a good vegetative cover.

THE IMPORTANCE OF URBAN NUTRIENT MANAGEMENT

Nutrients in urban runoff have been identified as being a significant contributor to the decline of the Chesapeake Bay, as well as Virginia's rivers, lakes, streams and groundwater. Improper timing or over application of plant nutrients is a major cause of non-point source pollution that can result in the impairment of Virginia's groundwater and surface waters. Runoff that carries nitrogen or phosphorus can lead to the increased growth of algae and aquatic weeds, de-oxygenation, and reduced water clarity, which degrades water quality and stresses underwater plant and animal life.

Typical land development practices degrade soil quality and make it difficult to establish lawns and landscaped areas. In the course of development, soil rich in organic material is often stripped, compacted, buried under subsoil, or removed and replaced with shallower depths of lower quality, imported soil or fill material. Properly establishing an appropriate and uniform vegetative cover as quickly as possible on denuded sites plays an extremely important role in reducing erosion and minimizing sedimentation to downstream waterways.

Nutrient management on construction sites helps prevent the pollution and degradation of state waters. Not only are there economic benefits of applying less fertilizer, nutrient reduction can be achieved by applying fertilizer more efficiently. In short, nutrient management is an environmentally and economically sound practice for restoring waters in Virginia and involves the implementation of practices that promote vegetative cover in developing areas while protecting water quality.

ESTABLISHMENT OF VEGETATIVE COVER

Developing a fertile soil is a crucial step in the establishment of vegetation, which can reduce the amount of fertilizer required to maintain good vegetative cover. A fertile soil has the capacity to supply the nutritional needs of the plants being established. Good soil quality characteristics include good soil texture, adequate nutrients available for plant growth, good moisture holding capacity, and the appropriate soil acidity/alkalinity balance (pH). The following is a discussion of the steps needed to ensure good vegetative growth.

1. Soil Tests

Soil tests are extremely important and should be conducted on every site. Soil tests provide specific information on the amounts of phosphorus, potassium, calcium and magnesium available for plant uptake and recommends additional amounts as required. Soil tests are crucial for determining the amount of lime needed to obtain an appropriate soil pH for the vegetation being established. Soil test results include recommendations specific to the site and vegetation being grown. Soil tests recommend the amount of plant nutrients and lime needed to promote and maintain good plant growth. Soil tests may be performed by the Cooperative Extension Service Soil Testing Laboratory at VPI & SU, or by a reputable commercial laboratory. Also note that County Extension offices have soil testing supplies and information.

Soil tests are not used to determine nitrogen needs. Nitrogen is applied based upon established requirements for the plant to be grown, season of growth, and intended use.

2. Surface Roughening

Provide a rough soil surface by stair-step grading, grooving, or tracking the soil to be vegetated or by leaving slopes in a roughened condition by not fine-grading, in accordance with the *1992 Virginia Erosion & Sediment Control Handbook* (Std & Spec 3.29). Seed germination is difficult with compacted soils. Rough, loose soil surfaces helps prevent the loss of lime and fertilizer due to runoff, increases water infiltration, and provides seed coverage, which aids in seed germination.

3. Soil Amendments & Soil Quality

Materials such as sand, vermiculite, peat, and compost may be added to soil to modify texture, improve structure and increase the moisture holding capacity. It is also recommended to conserve existing soil quality by preserving and reapplying topsoil in accordance with the *1992 Virginia Erosion & Sediment Control Handbook* (Std & Spec 3.30). Areas that have been compacted, or where duff or underlying topsoil is removed, should be amended with compost to improve soil quality.

4. Lime

Adjusting the soil pH between 6.25 to 6.5 is extremely important for grass establishment, especially in the acidic soils of Virginia. A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of denuded sites. However, when a soil test has not been performed, apply 2-tons/acre (90 pounds per 1,000 square feet) of pulverized agricultural grade limestone.

5. Fertilizer

Never apply more than 1 pound of water soluble nitrogen per 1,000 square feet within a 30 day period. Nitrogen should be applied based upon established requirements of the plant to be grown, season of growth, and intended use. Establishing a uniform dense vegetative cover with a good root system reduces the potential for pollution by decreasing erosion and runoff, increasing the plants ability for nutrient uptake, and reducing pesticide use. A detailed discussion on fertilizer use is provided in the 'Updated Fertilizer Specifications and Rates for Establishment' section of this bulletin.

6. Incorporation

Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by discing or by other means. Incorporation reduces the potential nutrient loss due to runoff, as well as significantly increasing the success of establishing a vegetative cover. When surface roughening does not occur prior to the application of lime and fertilizer, 'mix' the lime and fertilizer into the soil, at least 4 inches, by the methods described in the *1992 Virginia Erosion and Sediment Control Handbook* (Std & Spec 3.29).

When incorporation does not occur, and fertilizer and lime is applied directly to a smooth surface, the phosphorus (P_2O_5) application rate must be reduced by half because of the limited contact area with soil and the risk of nutrients being lost in runoff.

7. Seeding

Selection of plants is based on climate, topography, soils, land use and the planting season. The *1992 Virginia Erosion and Sediment Control Handbook* vegetative cover standards and specifications 3.31 Temporary Seeding, 3.32 Permanent Seeding, 3.33 Sodding, and 3.34 Bermudagrass & Zoysiagrass, describe in detail the specifications for plant selection. In addition, attached are one-page updates to the vegetative cover standards and specifications, which provide updated fertilizer and lime rates and the seeding schedules for the different physiographic regions of Virginia.

8. Mulching

The application of mulch to the soil surface, for both temporary and permanent seeding, is one of the most effective means of controlling runoff and erosion on disturbed land. All permanent seeding must be mulched immediately upon completion of seed application. It is especially important to mulch liberally in mid-summer and prior to winter. Mulching prevents erosion, and thereby pollution, by protecting the soil surface and fostering the growth of vegetation by increasing the moisture content and providing insulation from extreme temperatures. The *1992 Virginia Erosion and Sediment Control Handbook* (Std & Spec 3.35) details the mulch specifications and includes a list of the typical materials used to mulch (for example straw, wood chips, and fiber mulch).

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9. Hydroseeding

Hydroseeding is a mechanical method of applying seed, fertilizer, and mulch to land development sites in one step. This method is efficient in providing an immediate cover to denuded sites; however, the surface must be carefully prepared in order for successful seed germination. Hydroseed on rough, loose surfaces only. Roughen the surface prior to application of hydroseeding, per the specification above and in accordance with the *1992 Virginia Erosion & Sediment Control Handbook* (Std & Spec 3.29). Although proper soil pH is crucial in establishing good vegetative cover, lime is usually not included in the hydroseed mix. Therefore, lime should be incorporated into the soil as needed when preparing the site for hydroseeding.

To avoid poor seed germination as a result of seed damage during hydroseeding, it is recommended that if the machinery breaks down from 30 minutes to 2 hours, 50% more seed must be added to the tank. Beyond 2 hours, a full rate of new seed is usually necessary.

UPDATED FERTILIZER SPECIFICATIONS AND RATES FOR ESTABLISHMENT

Plant nutrients should be applied based upon established requirements of the plant to be grown, season of growth, and intended use, as specified in the *1992 Virginia Erosion and Sediment Control Handbook* (Std & Spec 3.31, 3.32, 3.33, and 3.34). The timing and rate of fertilizer application depends on the type of grass. There are basically two types of grasses, warm and cool season grasses. Warm season grasses (Bermuda, Zoysia) are those that go dormant in the winter. Cool season grasses (Fescue, Bluegrass) are those that stay green year round.

1. Recommended Season for Applying Nitrogen Fertilizers

The earliest spring application of nitrogen for **cool season** grasses is six weeks prior to the last average frost date (for example, February 6 for Virginia Beach and March 1 for Roanoke). The latest fall application of nitrogen for **cool season** grasses is six weeks after the first average frost date (for example, December 29 for Virginia Beach and December 1 for Roanoke).

The earliest spring application of nitrogen for **warm season** grasses is the last average frost date for the region (for example, March 20 for Virginia Beach and April 15 for Roanoke). The latest fall application of nitrogen for **warm season** grasses is 30 days prior to the average first frost date for the region (for example, October 15 for Virginia Beach and September 20 for Roanoke).

2. Per Application Rates

Phosphorus (P) and potassium (K) fertilizer requirements should be determined by a soil test. Never apply more than one (1) pound of water soluble nitrogen per 1,000 square feet within a 30 day period. The following table itemizes the fertilization rate revisions to standards and specifications 3.31 Temporary Seeding, 3.32 Permanent Seeding, 3.33 Sodding, and 3.34 Bermudagrass & Zoysiagrass Establishment.

Summary of Fertilizer Specification Revisions for Establishment of Turf

Standards & Specifications		2003 Urban Nutrient Management Technical Bulletin
3.31 Temporary Seeding		**10-10-10** fertilizer applied at a rate of **450** lbs. / acre or **10** lbs. / 1,000 ft^2
3.32 Permanent Seeding	Mixed Grasses & Legumes	**10-20-10** fertilizer applied at a rate of **500** lbs. / acre or **12** lbs. / 1,000 ft^2
	Legume stands only	Apply the equivalent of 100 lbs. of phosphate (P_2O_5) and 100 lbs. of Potash (K_2O) per acre. NO NITROGEN (N)
	Grass stands only	**10-20-10** fertilizer applied at a rate of **500** lbs. / acre or **12** lbs. / 1,000 ft^2
3.33 Sodding		**10-10-10** fertilizer applied at a rate of **450** lbs. / acre or **10** lbs. / 1,000 ft^2. NOTE: For cool season grasses apply fertilizer in fall or spring. For warm season grasses apply the fertilizer in late spring or summer only.
3.34 Bermudagrass & Zoysiagrass Establishment		**10-10-10** fertilizer applied at a rate of **500** lbs. / acre or **12** lbs. / 1,000 ft^2. Apply additional phosphorus and potassium 30-60 days later based on the soil test. Apply an additional equivalent of 1 lb./1,000 ft^2 of nitrogen when the P & K are applied.

3. Using Fertilizer Analysis to Calculate Nitrogen Rates

All fertilizer packages have three numbers present on the package (for example, 10-10-10 or 16-4-8). These three numbers indicate the percentage of nitrogen (N), phosphorus (P_2O_5), and potash (K_2O) present by weight which is called the N-P-K ratio. For example, a 20 pound bag of 10-6-4 is 10 percent nitrogen (2 lb. of N), 6 percent phosphate (1.2 lb. of P_2O_5), and 4 percent potash (0.8 lb. of K_2O) the remaining is inert material to facilitate even application of fertilizer.

The Virginia nutrient management recommendation is to apply no more than 1 lb. of nitrogen per 1,000 square feet within a 30 day period. A fertilization rate of 1 lb. of nitrogen per 1,000 square feet can be obtained for any site by using the fertilizer analyses on the bag and knowing the area of application.

Fertilizer Bag Reads:	Amount to Fertilizer to Apply 1 lb. of nitrogen / 1000 sq.ft.
6-2-0	16.6 lb.
10-10-10	10 lb.
16-4-8	6.2 lb.
20-5-5	5 lb.
22-3-14	4.5 lb.
29-3-7	3.4 lb.

4. Use of Slowly Available Forms of Nitrogen
Fertilizer bags will state the source or category from which the nitrogen is derived. Nitrogen fertilizers have two categories: Water Soluble Nitrogen (i.e., all nitrogen is immediately available); and Slowly Available Nitrogen (i.e., nitrogen is available over an extended period of time). The nitrogen source impacts how grass is fertilized and the rate and timing of application of fertilizer.

Choose a fertilizer that has some amount of Slowly Available Nitrogen (SAN). Slowly available nitrogen fertilizers make nitrogen available a little at a time, the way most grasses need it, which reduces both the potential of excess nutrients in runoff and the leaching potential of excess nutrients into groundwater. Sources of SAN are usually stated on the label. It may be stated as % Water Insoluble Nitrogen (WIN), sulfur-coated urea, natural organic nitrogen or other controlled release materials used to coat the fertilizer. The % WIN is usually stated on the fertilizer container, if the % WIN is not listed, assume that all the nitrogen in the fertilizer is water soluble and immediately available. As a general guideline, if the fertilizer has 50% WIN or less, it should be applied in the same manner as readily available nitrogen. If the fertilizer is 50% WIN or greater, it should be applied as a SAN.

UPDATED FERTILIZER SPECIFICATIONS AND RATES FOR MANAGEMENT

1. Application of Fertilizer for Maintenance
Apply fertilizer when grass is actively growing and can utilize the nutrients. Summer is best for warm season grasses (zoysiagrass and bermudagrass) while the fall months are best for cool season grasses (tall fescue, Kentucky bluegrass, perennial ryegrass).

2. Annual Application Rates

A. When applying 100% Water Soluble Nitrogen sources (those that have all the nitrogen immediately available for plant use), the following rates apply:

- Never apply more than one (1) pound of water soluble nitrogen per 1,000 square feet within a 30 day period
- No more than 3.5 lbs. of nitrogen per 1,000 square feet annually on **cool season** grass.
- No more than 4.0 lbs. of nitrogen per 1,000 square feet annually on **warm season** grass.

B. When applying slowly available nitrogen (SAN, WIN, sulfur-coated urea, natural organic nitrogen or other controlled release materials), total annual nitrogen application rates may be adjusted incrementally by referring to the following figure. The maximum annual nirogen rates when using 50% or greater SAN is as follows:

- No more than 5.0 lbs. of nitrogen per 1,000 square feet annually on **cool season** grass.
- No more than 5.5 lbs. of nitrogen per 1,000 square feet annually on **warm season** grass.

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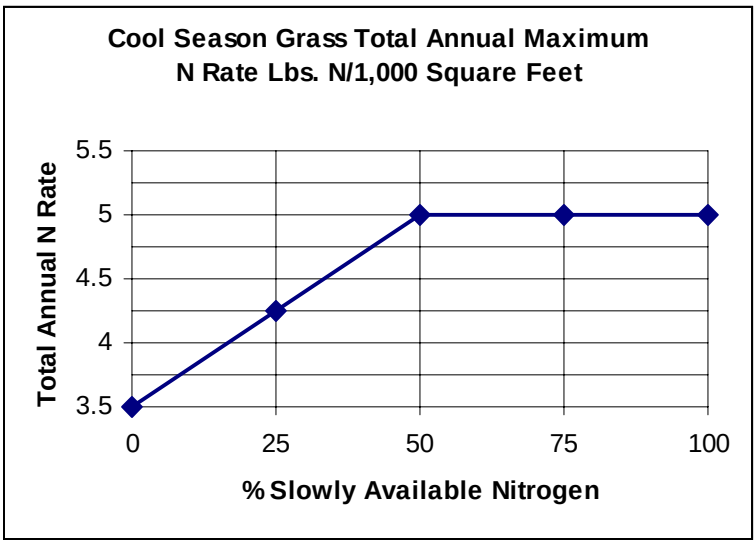

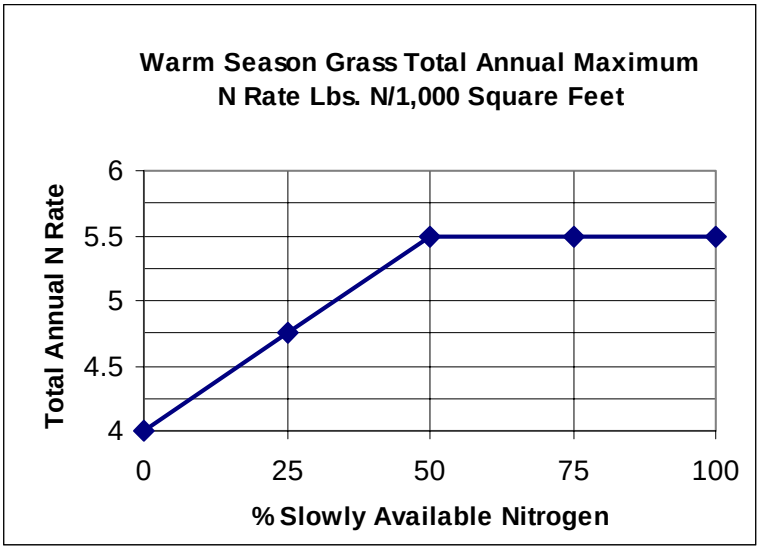

C. When applying maintenance fertilizer on established sod,

Pounds of nitrogen per 1,000 sq. ft. if the fertilizer is less than 50 percent WIN

Month	Type of Grass			
	Tall Fescue Perennial Rye	Kentucky Bluegrass	Bermudagrass	Zoysiagrass
September	1	1	0	0
October	1	1	0	0
Early November	0	0	0	0
April	0	0	0	0
May	0-0.5	0-0.05	1	1
June	0	0	1	0
July/August	0	0	0	1
Yearly Lbs. N/1000 sf	2.5	2.5	2	2

Pounds of nitrogen per 1,000 sq. ft. if the fertilizer is more than 50 percent WIN

Month	Type of Grass			
	Tall Fescue Perennial Rye	Kentucky Bluegrass	Bermudagrass	Zoysiagrass
August 15	1.5	1.5	0	0
October 1	1.5	1.5	0	0
April	0	0	1.5	1.5
May 15	0	0	0	0
June	0	0	1.5	1.5
Yearly Lbs. N/1000 sf	3	3	3	3

TABLE 3.31-B
(Revised June 2003)
TEMPORARY SEEDING SPECIFICATIONS
QUICK REFERENCE FOR ALL REGIONS

SEED		
APPLICATION DATES	**SPECIES**	**APPLICATION RATES**
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 -100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (lolium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

FERTILIZER & LIME

- Apply 10-10-10 **fertilizer** at a rate of 450 lbs. / acre (or 10 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:
1 - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
2 - Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
3 - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs

TABLE 3.32-C
(Revised June 2003)
PERMANENT SEEDING SPECIFICATIONS FOR APPALACHIAN/MOUNTAIN AREA

SEED[1]		
LAND USE	**SPECIES**	**APPLICATION RATES**
Minimum Care Lawn (Commercial or Residential)	Tall Fescue[1] Perennial Ryegrass[2] Kentucky Bluegrass[1]	90-100% 0-10% 0-10% TOTAL: 200-250 lbs.
High-Maintenance Lawn	Minimum of three (3) up to five (5) varieties of Kentucky Bluegrass from approved list for use in Virginia[1]	TOTAL: 125 lbs.
General Slope (3:1 or less)	Tall Fescue[1] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[3]	128 lbs. 2 lbs. 20 lbs. TOTAL: 150 lbs.
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue[1] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[3] Crownvetch[4]	108 lbs. 2 lbs. 20 lbs. 20 lbs. TOTAL: 150 lbs.

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at http://sudan.cses.vt.edu/html/Turf/turf/publications/publications2.html

2 - Perennial Ryegrass will germinate faster and at lower soil temperatures than Tall Fescues, thereby providing cover and erosion resistance for seedbed.

3 - Use seasonal nurse crop in accordance with seeding dates as stated below:

March, April - May 15th ……	Annual Rye
May 16th - August 15th ……	Foxtail Millet
August 16th - September, October ……..	Annual Rye
November - February ……..	Winter Rye

4 - All legume seed must be properly inoculated. If Flatpea is used, increase to 30 lbs/acre. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30 -40 lbs/acre.

FERTILIZER & LIME

- Apply 10-20-10 **fertilizer** at a rate of **500** lbs. / acre (or 12 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:

- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs

TABLE 3.32-D
(Revised June 2003)
PERMANENT SEEDING SPECIFICATIONS FOR PIEDMONT AREA

SEED[1]		
LAND USE	**SPECIES**	**APPLICATION PER ACRE**
Minimum Care Lawn (Commercial or Residential)	Tall Fescue[1] Perennial Ryegrass Kentucky Bluegrass[1]	95-100% 0-5% 0-5% TOTAL: 175-200 lbs.
High-Maintenance Lawn	Tall Fescue[1]	TOTAL: 200-250 lbs.
General Slope (3:1 or less)	Tall Fescue[1] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[2]	128 lbs. 2 lbs. 20 lbs. TOTAL: 150 lbs.
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue[1] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[2] Crownvetch[3]	108 lbs. 2 lbs. 20 lbs. 20 lbs. TOTAL: 150 lbs.

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at http://sudan.cses.vt.edu/html/Turf/turf/publications/publications2.html

2 - Use seasonal nurse crop in accordance with seeding dates as stated below:

February 16th - April ……..	Annual Rye
May 1st - August 15th ……	Foxtail Millet
August 16th - October ……	Annual Rye
November - February 15th ……	Winter Rye

3 - Substitute Sericea lespedeza for Crownvetch east of Farmville, VA (May through September use hulled seed, all other periods, use unhulled Sericea). If Flatpea is used, increase rate to 30 lbs./acre. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30 -40

FERTILIZER & LIME

- Apply 10-20-10 **fertilizer** at a rate of **500** lbs. / acre (or 12 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:

- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs

TABLE 3.32-E
(Revised June 2003)
PERMANENT SEEDING SPECIFICATIONS FOR COASTAL PLAIN AREA

SEED[1]		
LAND USE	**SPECIES**	**APPLICATION RATES**
Minimum Care Lawn (Commercial or Residential)	Tall Fescue[1] **or** Bermudagrass[1]	175 - 200 lbs. 75 lbs.
High-Maintenance Lawn	Tall Fescue[1] **or** Bermudagrass[1] (seed) **or** Bermudagrass[1] (by other vegetative establishment method, see Std. & Spec. 3.34)	200-250 lbs. 40 lbs. (unhulled) 30 lbs. (hulled)
General Slope (3:1 or less)	Tall Fescue[1] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[2]	128 lbs. 2 lbs. 20 lbs. TOTAL: 150 lbs.
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue[1] Bermudagrass[1] Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop[2] Sericea Lespedeza[3]	93-108 lbs. 0-15 lbs. 2 lbs. 20 lbs. 20 lbs. TOTAL: 150 lbs.

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at http://sudan.cses.vt.edu/html/Turf/turf/publications/publications2.html

2 - Use seasonal nurse crop in accordance with seeding dates as stated below:

February, March - April ..…….……..	Annual Rye
May 1st - August ……..……	Foxtail Millet
September, October - November 15th ……	Annual Rye
November 16th - January ……..…..	Winter Rye

3 - May through October, use hulled seed. All other seeding periods, use unhulled seed. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30 -40 lbs/acre.

FERTILIZER & LIME

- Apply 10-20-10 **fertilizer** at a rate of **500** lbs. / acre (or 12 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:

- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs